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The history of Italo and the benefits of competition in the Italian HSR sector

Andrea Giuricin, Roberto Tosatti

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Dipartimento di Scienze Economico-Aziendali e Diritto per l'Economia
Via Bicocca degli Arcimboldi 8 – 20126 MILANO

Abstract

The purpose of this study, divided in three different parts, is to represent the evolution of the Italian high-speed railway (HSR) sector from the origin to the competition phase, focusing attention on the non-public competitor, Italo, recently became an American company. In the first part of the study will be provided a presentation about the liberalization of the Italian rail market under EU regulation. This theme will be address within a legal point of view. In the second part of the paper will be represent the evolution of the HSR sector in the country, from an infrastructural and economics point of view. In particular we will discuss about the development of the service until the competition phase. In the last part we will talk about the history of NTV and its service (Italo). We will talk about the origins and the current commercial situation. Lately we will analyse the results of its first 6 years of life, comparing the HSR sector before and after its entry and the benefits it produced.

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1. The liberalization of the Italian railway market

Before talking about the HSR sector, we consider useful to represent the previous situation about the railway sector in Italy, focusing on the liberalization of the infrastructure. The markets' liberalization is one of the main purposes of the European Union (EU) in virtue of the principle of free competition that it is promoting, and, between '80s and '90s, it made a great effort in the production of directives suitable for achieving this purpose. With particular reference to the railway transport one, it must be said that the liberalization of this sector was not easy to implement. The directive 91/440/EC (transposed in the Italian law with the Presidential Decree 277/98) has therefore laid the foundations for a substantial reorganization of the European railway system, whose structure was stable for many decades, with national railway companies (often directly dependent on the Ministry of Transport) operating as monopolists, assisted by private companies operating on minor routes (usually under concession). Furthermore, the European legislator introduced two other directive, 18 and 19 of 1995 (EC), about the granting of the license, necessary to operate on the infrastructure, and about the management of the infrastructure itself.

Between 2001 and 2016, EU passed four legislative packages with the aim of gradually opening up rail transport service markets for competition, making national railway systems interoperable and defining appropriate framework conditions for the development of a single European railway area. These include safety requirements, the creation of the European Agency for railways and rail regulatory bodies in each member state as well as rail passenger rights, and in interoperability.

The first railway package, issued in 2001, initiated the opening of the market to competition, guaranteeing fair and non-discriminatory access to the railway network and its optimal use. In particular the European legislator obligates each member state to create an "independent" body that will manage the railway infrastructure. In the Italian legal system the package was implemented with the Legislative Decrees no. 188/2003 ad 268/2004. Recently the directives have been the subject of recast in Directive 2012/34/EC (transposed through Legislative Decree 112/2015), with the following important innovations:

- the strengthening of national regulators' powers and the establishment of a European regulators' network;
- the publication of a network information prospectus in at least two official languages of the European Union;
- the publication, written by the member states, of an indicative strategy for the development of railway infrastructure for at least five years.

The second railway package was approved in 2004 and includes measures relating to safety, with the establishment, for example, of the European Railway Agency (ERA), and relating to interoperability of the European railway system. The second package was implemented in Italy with the Legislative Decrees 162 and 163 of 2007, that led to the creation of the Italian railway agency (ANSF).

The third railway package, approved in October 2007, aims to create an integrated European railway area, with the purpose of making rail transport more competitive and attractive for users, as well as rules for the licensing required for the service of passenger transport. The directives of this package have been implemented through the law 99/2009 and the Legislative Decrees 15 and 247 of 2010. Between the third and the fourth package, the EU approved several directives about interoperability and security, implemented through the Legislative Decrees 191/2010 and 43/2011.

In January 2013 EU presented the fourth railway package: a set of six legislative texts, divided in technical and market "pillars", designed to complete the single railway market (called "Single European Railway Area"). Its overarching goal is to revitalize the rail sector and make it more competitive. In particular:

- a proposal for a regulation on the standardization of railway undertakings' accounts;
- a proposal for a regulation concerning ERA;
- a proposal for a regulation on the opening of the market for domestic passenger transport services by rail;
- a proposal for a directive on the European railway area;
- proposal for a directive and a report on the interoperability of the European railway system;
- a proposal for a directive on railway safety;
- a report on the profile and tasks of other crew members;
- a report on the liberalization of the international rail passenger transport market

The proposed measures, with which the Commission intends to provide a solution to the problems described above, are divided into four areas of intervention:

- 1) ensure the efficiency and standardization of the rules in order to reduce the technical and administrative burdens for railway companies and favoring the entry of new operators in the market. The implementation of these measures should result in a 20% reduction both in terms of access to the market for new operators, and the cost and duration of the procedures for authorizing rolling stock, with an overall savings for companies estimated at around 500 Mln Euro by 2025;
- 2) improve the quality and diversify the service offer thanks to the entry of new operators in the management of national rail passenger transport from December 2019. The implementation of these measures, associated with structural reforms, should ensure, by 2035, more than 40 Bln Euro of financial benefits to citizens and businesses;
- 3) avoid conflicts of interest and to guarantee non-discriminatory access to the market to all companies, guarantee a more equitable and efficient management of the network, strengthening the role of infrastructure managers with regard to the control of all functions the rail network and establishing the operational and financial independence of the infrastructure managers from all operators providing rail transport services;
- 4) ensure the presence of qualified and motivated personnel to operate in an innovative and competitive context deriving from the greater opening of the railway markets.

For convenience, we have represented in *Tab. 1* a summary about the legislative evolution of the railway liberalization process, discussed in the previous pages.

Tab. 1 - Legal evolution of the European market liberalization process (August 2018)

	Main contents	European law	Italian law
Dir. 91/440 (and subsequent)	Separation (accounting) between infrastructure manager and service operator, and independence from the State; railway license system	<ul style="list-style-type: none"> • Dir. 91/440/EC • Dir. 18 and 19 of 1995 (EC) 	D.P.R. 277/98
First package (2001)	Creation of TERFN and regulatory body; preparation, by the infrastructure manager, of the Network Statement and introduction of the security certificate	Dir. 12, 13 and 14 of 2001 (EC)	D.Lgs. 188/2003 and 268/2004

Second package (2003)	Creation of ERA; the security certificate must be issued by a body independent from the infrastructure manager; development of interoperability and introduction of cabotage	Reg. 81 and Dir. 49, 50 and 51 of 2004 (EC)	D.Lgs. 162 and 163 of 2007
Third package (2007)	Innovations for the market liberalization process (e.g. the international transport service with intermediate stations); regulation about railway transportation public service, drive license and passenger rights	Dir. 58 and 59, and Reg. 1370 and 1371 of 2007 (EC)	Law 99/2009 and D.Lgs. 15, 191 and 247 of 2010
Recast (2012)	strengthening of the authority body and more specific definition about railway companies' independence	Dir. 2012/34/EU	D.Lgs. 112/2015

Sources: Author personal elaboration

Among these innovations introduced by the European legislator, the two most important for Italy were the establishment of an independent railway agency that supervises the liberalization of the market, and the independency of the infrastructure's managing institution.

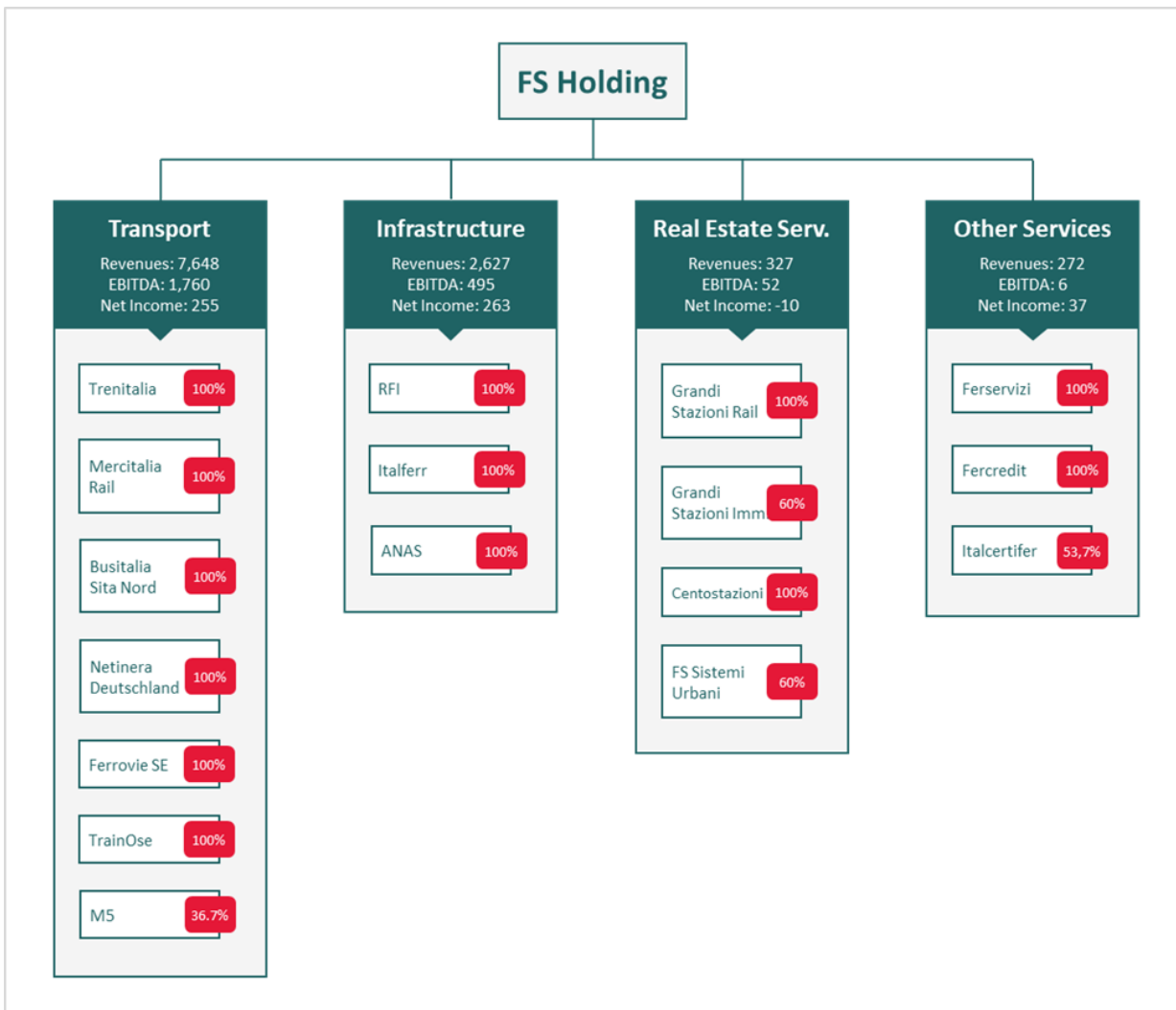
About the first innovation, with the Decree Law 201/2011 the Italian government instituted the Transport Regulation Authority (ART), headquartered in Turin, with the following functions:

- guarantee fair and non-discriminatory access to infrastructures and to rail, airport and port networks;
- define, if deemed necessary in relation to the conditions of competition actually existing in the individual markets, the criteria for the setting by the competent subjects of the tariffs, fees and tolls;
- establish the minimum quality conditions for transport services with public or subsidized public service obligations;
- define the tender bidding schemes for the assignment of exclusive transport services and the agreements to be included in the specifications of the same tenders.

About the second aspect, at the end of '90s/beginning of '2000s, the Italian government, transposing the directive EEC 440/1991 and other previous European directives, started to separate the infrastructure from the rest of the railway service; after a period of deep organizational changes developed in early '90s, *Ferrovie dello Stato Italiane* (FS, the national railway company), in 1999 was

structured in 4 different divisions: passengers, regional transport, freight transport and infrastructure. The first 3 divisions became, one year later, *Trenitalia*, experienced in the following years different changes and acquisitions. The infrastructure division became, in 2001, *Rete Ferroviaria Italiana* (RFI). Both of these companies are separated, but are included in the same holding, FS. In this period several separated companies were created (functional separation), but all owned 100% and controlled by FS, and structured in 4 new divisions: transport, infrastructure, real estate services and other services. *Fig. 1* can help to represent the current organizational situation.

Fig. 1 - Structure of FS holding by divisions (Mln Euro) and percentages of ownership (2017)



Sources: FS Financial statement (2017); www.fsitaliane.it

2. The evolution of the Italian HSR sector

In the aftermath of the WWII, during the reconstruction and the economic boom period, Italy wanted to provide itself with a HSR infrastructure that could help its import/export sector and to move faster its citizens within its borders, as well as connecting the country with the rest of Europe. In these first years the government chose to invest more in the rolling stock than improving the infrastructure (due to the huge needed costs to come back at the “normal” infrastructure pre-war situation), such as FIAT Y 0160 (“Pendolino”), ETR 300 (“Settebello”) and ETR 250 (“Arlecchino”). These trains, even if they could reach speeds up to 200 km/h, should proceed with speeds slightly above the average commercial speed (110 km/h) considering they were sharing the infrastructure with other types of trains. For this reason, lately, FS decided to improve the infrastructure (especially about the security and signalling systems) increasing the commercial speed of these trains. In the late '60s, became to catch on the idea to develop a HSR infrastructure, separated from the normal one. In 1970 broke ground for the Rome-Florence HSR route, opening the first part (Rome-Città della Pieve) in 1977 (becoming the first European HSR, and second worldwide).

Despite the interest in this project, the works ended in 1992, after 22 years. Meanwhile, in 1986, for the first time, the trains were allowed to travel at 200 km/h, exceeding the limit of 180 km/h allowed in the fastest sections of the FS network, such as Rome-Naples. Two years later, ETR 450 (an evolution of Pendolino), with a speed of 250 km/h placed the Milan-Rome services in second place in Europe for maximum speed, after the French TGV (which in those years were traveling at 270 km/h) despite this train travelled on a non-HSR for 50% of its itinerary. It should be pointed out, however, that railway Rome-Florence was not an infrastructure totally dedicated to HSR, but it's just a technical improvement of the previous one; that's the reason why, lately, was necessary to further improve it for the new HSR standards. In the late '80s/early '90s the Italian government, taking other countries' experience as a model (France in particular), decided to invest more resources to this project, making a national network that could connect the main cities. For this reason, in 1991 the society *TAV Spa* was created, 100% owned by FS (at the beginning, 55% private and 45% public), with the purpose specifically for planning, designing and implementing an HSR network in Italy.

It was decided, considering the conformation of the country and the territorial distribution of the most important cities, to develop the network in two different axes: from North-East to North-West

(from Turin/Genova to Venice), and from North (the NW-NE axis) to South (Reggio Calabria) following the Tyrrhenian coast, with a crossroads in proximity to Bologna, making in this way a T-shaped railway network. These two axes will be also connected with:

- South-East route, connecting Naples with Bari. The maximum speed for this track will be 200 km/h;
- Sicily (Catania-Messina-Palermo) through the bridge over the Straits of Messina, still in the planning stages. To this day the railway connection from Sicily to the rest of Italy is made ferrying the trains, decomposing the coaches in Reggio Calabria and re-assemble them in Messina. The Sicilian network, still under construction (but mostly completed), will have a maximum speed at 200 km/h;
- The rest of the European HSR, connecting Italy with neighbouring countries. In particular Turin-Lyon (France), Milan-Zurich (Switzerland), Verona-Innsbruck (Austria) and Trieste-Ljubljana (Slovenia). For these specific projects it's a question of improving the previous infrastructure, increasing the capacity of moving people and goods (especially for the connection to Switzerland) rather than the speed.

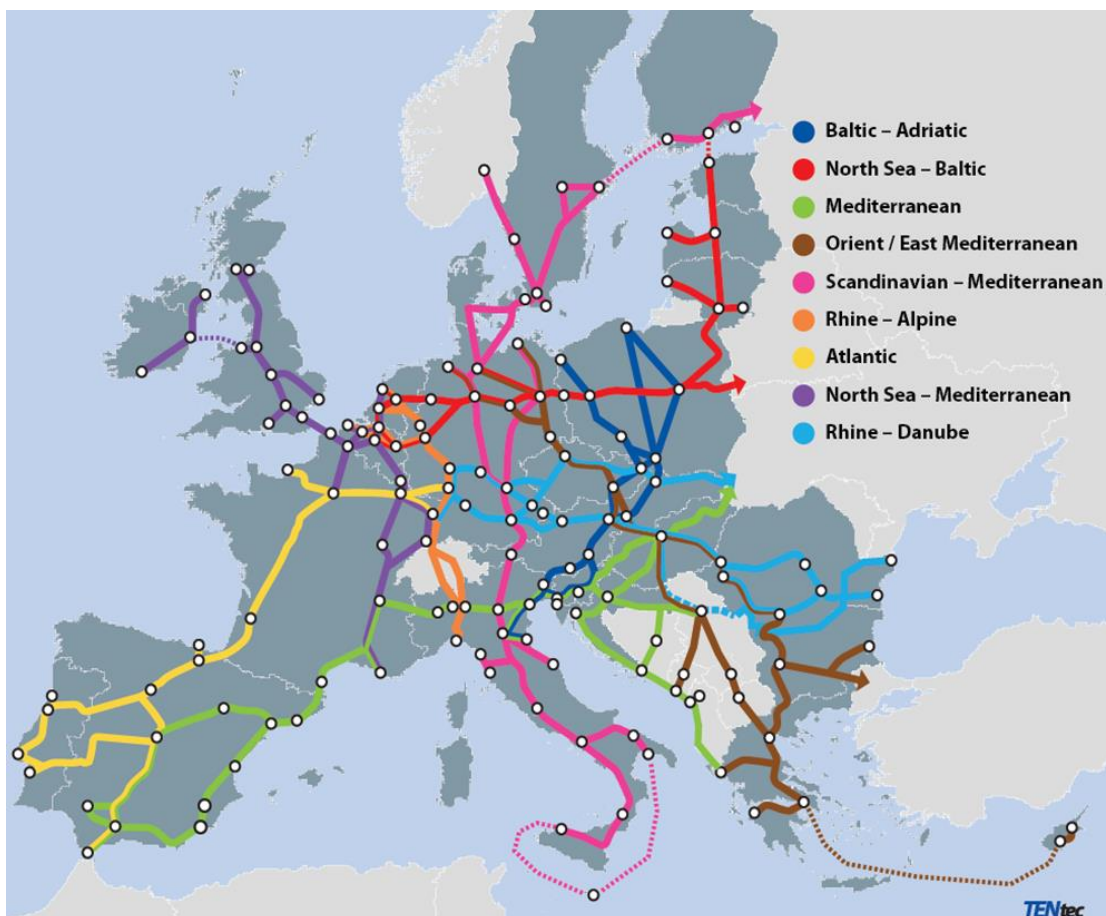
The development of the HSR, and in particular this last point (the connection with the rest of the European networks), ranks in the European project "Ten-T" (Trans European Transport Networks) that has the following purposes (according to Decision 1692/96/EC of the European Parliament and of the Council of 23rd July 1996):

- establishment and development of the connections, key links and interconnections needed to eliminate bottlenecks, fill in missing sections and complete major routes;
- establishment and development of infrastructure for access to the network, making it possible to link island, landlocked and peripheral regions with the central regions of the Community;
- the optimum combination and integration of the various modes of transport;
- integration of environmental concerns into the design and development of the network;
- gradual achievement of interoperability of network components;
- optimization of the capacity and efficiency of existing infrastructure;
- establishment of and improvement in interconnection points and intermodal platforms;
- improved safety and network reliability;

- the development and establishment of systems for the management and control of network traffic and user information with a view to optimizing use of the infrastructures;
- studies contributing to improved design and better implementation of the trans-European transport network.

In this project, a high speed and/or high capacity infrastructure, such as HSR, plays a central role in the process of developing nine different mobility “corridors” for the transportation of people and goods. In particular Italy, due to its position, appears to be crossed by 4 different corridors (as shown in *Fig. 2*): Baltic-Adriatic: from Gdansk to Venice; Scandinavian-Mediterranean: from Helsinki/Stockholm/Oslo to Sicily/Malta; Rhine-Alpine: From Rotterdam/Amsterdam to Genova; Mediterranean: from Algericas to Budapest.

Fig. 2 - Ten-T core network corridors



Sources: www.ec.europa.eu

Another characteristic of the Italian HSR, decided from the government and FS, was to combine high-speed factor with “high-capacity” factor. About the differences:

- The high-speed needed the construction and use of new lines, with heavy rigging, with traces that tend to be straight and where possible flat, made for trains built specifically to reach high top speeds;
- The high capacity is generally used as a synonym for the combined transport of goods (100-150 km/h) and passengers (250-300 km/h) on high-speed lines, or just an infrastructure that adopts an advanced traffic control that allows the transit of a greater number of trains than a normal infrastructure.

In order to design the HSR network with these qualities, it was decided to implement, for the first time in Europe, the “European Rail Traffic Management System” (ERTM) level 2, the most advanced signalling system, which represents the standard chosen to guarantee interoperability between European railway lines. The realisation of the HSR national network started in the early ‘90s, later than the other European countries, having the main purpose to connect first the route Turin-Naples/Salerno (inaugurated in 2009), identified as the most important for the country.

Tab. 2 can help to represent the HSR routes completed so far (July 2018), showing also the ratio between costs and length for each route, while *Tab. 3* shows the routes under realization (specifying the expected realization date) divided for axes, and those still in planning stages.

Tab. 2 - HSR routes realised (July 2018)

Years of construction	Route	Length (km)	Investment cost (Mln Euro)	Cost/km (Mln Euro/km)
<i>North-West - North-East axis</i>		258	10,255	39.75
2001-2007	Venice-Padova	28	467	16.68
2002-2009	Turin-Milan	145	7,788	53.71
2002-2017	Milan-Brescia	85	2,000	23.5
<i>North - South axis</i>		977	38,029	38.92
1970-1992	Rome-Florence	265	12,965 ^(A)	48.92
1990-2008	Naples-Salerno	35	1,100 ^(A)	31.43
1990-2008	Milan-Bologna	243	6,916	28.46
1994-2009	Rome-Naples	232	5,671	24.44
1994-2009	Bologna-Verona	115	5,500 ^(A)	47.83
1996-2006	Bologna-Florence	87	5,877	67.55
Total		1,235	48,284	39.10

^(A) Estimation

Sources: European Court Auditors (2018); Beria et al. (2016); RFI (2007); FS; Sole24Ore

Tab. 3 - HSR routes under realization or still in planning stages (August 2018)

Expected realization date	Route	Length (km)	Estimated cost (Mln Euro)	Estimated cost/km (Mln Euro/km)
<i>North-West - North-East axis</i>		367	16,084	43.82
2022	Genova-Novi Ligure	53	6,198	116.94
2024	Brescia-Verona	77	3,400	44.16
2028	Verona-Padova	81	4,486	55.38
2024	Venice-Trieste	156	2,000	12.82
<i>Sicily + South-East</i>		343	15,100	44.02
2022	Catania-Messina-Palermo	196	8,900	45.41
2026	Naples-Bari	147	6,200	42.18
Total Italian projects		710	31,184	43.92
<i>Cross-border corridors^(A)</i>		825	37,220	45.11
2030	Turin-Lyon	235	<ul style="list-style-type: none"> • Italy: 4,700 • France: 7,000 • EU (contribution): 3,400 	64.25
<ul style="list-style-type: none"> • 2020 for Ceneri base tunnel opening • n.d. for Italian railway updates 	Milan-Zurich ^(B)	310 Milan-Zurich + other cross-border lines	<ul style="list-style-type: none"> • Italy: 600 for infrastructure updates • Switzerland: 12,000 for Alptransit project + 120 for Luino-Gallarate line updates 	41.03
<ul style="list-style-type: none"> • 2027 for Brenner base tunnel opening • n.d. for railway updates 	Verona-Innsbruck	280	<ul style="list-style-type: none"> • Italy: 3,700 for Brennero base tunnel + 1,000 for railway updates • Austria: 3,700 for Brennero base tunnel + n.d. for railway updates • EU (contribution): 1,000 	33.57
Total Italian + Cross-border projects		1,535	68,404	44.56
<i>Routes in planning stages</i>		600	<i>n.d.</i>	<i>n.d.</i>
n.d.	Salerno-Reggio Calabria	400	n.d.	n.d.
n.d.	Trieste-Ljubljana	200	n.d.	n.d.

^(A) In "Cross-border corridors" section the data "Estimated cost/km" refers to the total costs of the infrastructure, not just the Italian costs. Furthermore, all the calculations are related to defined data (excluding "n.d.")

^(B) The connection between Italy and Switzerland project doesn't consist just of a single HSR infrastructure, that already exist, but provides for the improvement of different cross borders railway lines and infrastructures, as Varese-Mendrisio (providing the connection between the Canton of Ticino and Malpensa airport) and the connection with Novara inter-port hub, in order to allow the transit of more trains between the two countries, especially for goods). These interventions rank in the Swiss project "Alptransit" for faster North-South rail links across the Swiss Alps.

Sources: European Court Auditors (2018), Beria et al. (2016); RFI (2007); FS; SNCF (French railway), SSB (Swiss railway), OBB (Austrian railway), SŽ (Slovenian railway), Terzovalico; Sole24Ore, Corriere del Veneto, Ferrovie a Nord-Est; Fatto Quotidiano, Palermo Today, Ingegneri.info, Legambiente

All the info included in the last two charts, are represented for convenience in Fig. 3, in order to have visual representation of the HSR network territorial distribution.

Fig. 3 - HSR network in Italy (July 2018)



Sources: www.rfi.it; Author personal elaboration

After discussing the part about the infrastructure, we are going to talk about the evolution of the service. Due to the opening of the first HSR line (Rome-Florence), turned out that new type of trains and services were needed in order to align the Italy with other countries standards. In 1997, *Eurostar Italia AV* service (still entirely manage by FS) replaced Pendolino (that operated on Milan-Rome line, and other main routes) with ETR 450, 480 and 500. Due to the foundation of the new competitor, Italo (that will be discussed further in the next chapter) FS decided to segment its offer in different service (managed by its new subsidiary, Trenitalia), creating in 2008 the service “Freccie”, that definitely replaced the Eurostar service in 2012. Currently, the Italian long-distance railway service, with the exception of Intercity service, is performed with 3 different Freccie service:

- *Frecciarossa*, created in 2008, is the main HSR service with routes that operates exclusively on the HSR infrastructure. The service is performed with ETR 500 and 1000 that can reach 300 km/h, making 189 connections daily (100 between Milan and Rome). Frecciarossa is the main competitor of Italo;
- *Frecciargento*, created in 2012, covers both the HSR and the traditional lines traveling up to 250 km/h. There are 48 daily connections between Rome and some of the main metropolitan areas of the North and South of the country (routes not covered by Frecciarossa). The service is performed with ETR 485 and 600;
- *Freccia Bianca*, created in 2011, this service cannot take place in the HSR infrastructure, serving secondary routes at max 200 km/h.

The next chapter, after these two that introduced the current situation in this sector, will talk about the history of Italo and the effects he led in the Italian HSR market.

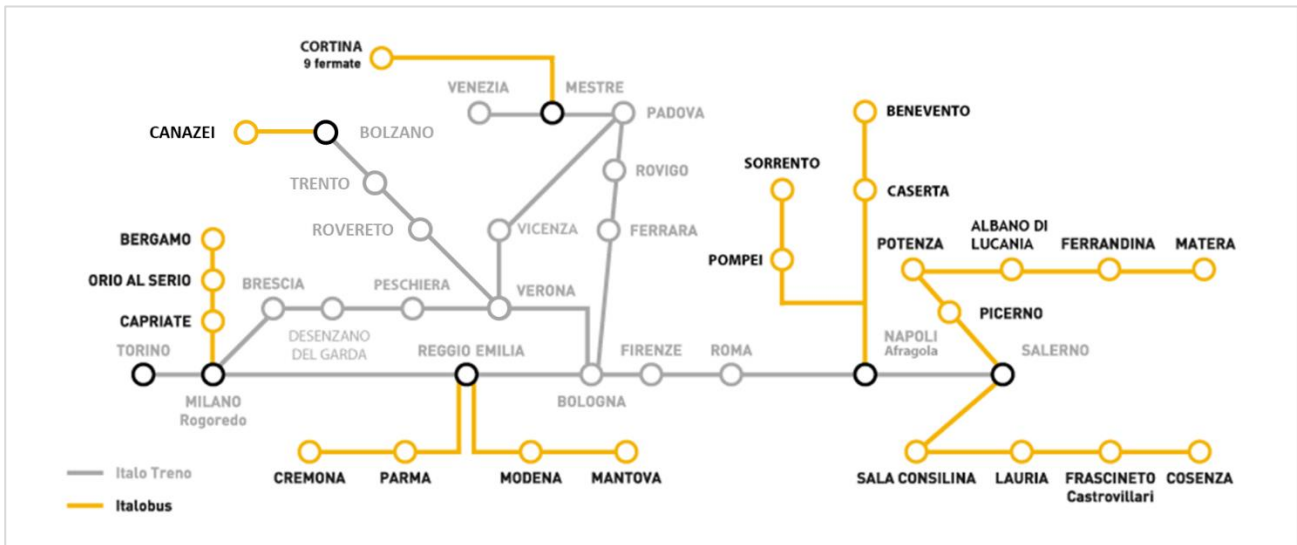
3. The effects of Italo competition in HSR market

In 2006 was founded *Nuovo Trasporto Viaggiatori (NTV)*, a private company created for operating in the HSR Italian market, just liberalized thanks to the European legislator (as described in the first chapter). The society was created by a group of Italian investors and entrepreneurs, signalling that SNCF (the French national railway company) joined the company in 2008. In the same year the society ordered Alstom to build the first 25 trains (AGV 575) of *Italo* (this is how they decided to name the service) fleet, delivered between 2011 and 2013. Still in 2011, NTV obtained from ANSF the security license, as provided for by European regulation, in order to operate on the infrastructure. In April 2012 there was finally the first service between Milan and Naples. From the beginning, NTV has blamed FS (and all its subsidiaries, Trenitalia and RFI in particular) to have anti-competitive behaviours, against the European directives and the Italian law. For example, in 2013 NTV sued FS (and won) to the Italian antitrust agency (AGCM) about the following points:

- haven't allowed NTV to use the main routes in the rush hours, a specific maintenance facility;
- missed signage and info desk inside the station;
- voluntary inefficiency inside the FS station (for example giving info to the passengers about the Italo trains platforms just few minutes before the trains' departure).

In 2014 NTV sued again FS to ART about the access charge, that changed from 13,4 Euro/km to 8,2 Euro/km. At the end of 2015 NTV inaugurated a new kind of service *Italobus*, in order to extend the service even to the cities that are not directly connected with the HSR infrastructure. With this integrated transportation network, extending the offer and competing in a new market, NTV wants to get passengers from different kind of competitors: first, Trenitalia with its regional rail service, and then private bus services (such as Flixbus). The cities connected to Italobus are secondary urban centers but interesting for cultural and touristic reasons. Seasonal routes are also planned, especially for summer, such as "CilentoBlu" that allows to connect Italo network with an important summer destination, such as Cilento. Over recent years Italo have had an important evolution about the cities connected with its service, especially thanks to a more liberalized HSR market, that allows NTV to operate in a quite-competition situation, obtained even through legal disputes with FS and its subsidiaries (such as Trenitalia and RFI itself). To this day (July 2018) Italo and Italobus services connect over 40 cities, as shown in *Fig. 4*.

Fig. 4 - Italo and ItaloBus service network (diagram)



Sources: www.italotreno.it

If we represent the last figure in a map (*Fig. 5*) we could take a better look of the territorial distribution of NTV services network. As you can see, the rail service (that still is the core service) is developed (if we analyse *Fig. 3*) in connection to HSR infrastructures, except for Verona-Bolzano route, that is the last entry in the network. For being precise, this last statement could seem not totally true: still considering the *Fig. 3*, we can see that from Brescia to Padova the infrastructure is far from complete; however, in this analysis we will take into account this part of the infrastructure as completed considering it under realization.

Still about the *Fig. 5*, we can also see that ItaloBus service is developed just in the Northern and Southern part of the country, not in the Central one.

Fig. 5 - Italo and ItaloBus service network (map)



Sources: www.italotreno.it; Author personal elaboration

During these years there were different changes in leadership, until 23rd January 2018, when the society announced 40% of NTV would be listed on the Italian stock exchange market. Few days later *Global Infrastructure Partner (GIP)*, an American infrastructure investment fund, offered 1,90 Bln Euro for 100% of NTV. After a short negotiation NTV was sold for 1.98 Bln Euro, debts included (equivalent to 440 Mln Euro). The value of the company (debt included) is around 11 times the EBITDA estimated for 2018 and it is higher than many airlines company.

After some years of difficulties, the company had a turnaround thanks to the decisions of the CEO, Flavio Cattaneo, that was able to make Italo profitable. It was not only reduction of cost, but a clear strategy of increasing the productivity and a more aggressive pricing strategy.

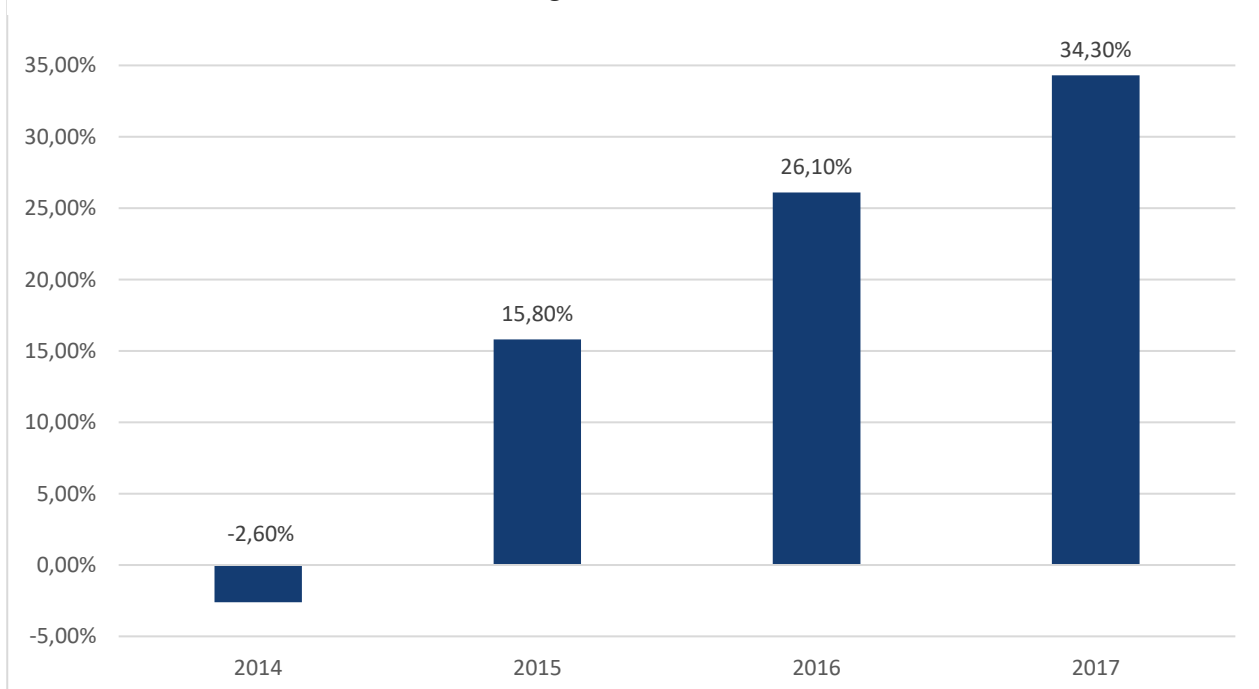
This strategy gave benefits not only to the private railway company that reached in 2017 a load factor closed to 80%, but also for the consumers that had a strong decrease of the prices.

The benefits were clear because since the beginning of the competition, the average yield in the HSR sector, where Italo operates, decreased around 40% while the demand in terms of passengers-km had an increase of 90% without the construction of new HSR infrastructures.

These impressive results in terms of demand and price were obtained although Italian economy had a strong recession and gross domestic product in 2017 was -2% in comparison to 2011.

The yield of Italo was around 7,5 Euro cents in the first part of 2017: thanks to the efficiency of the company this level of yield was able to give an EBITDA margin of 34.3% in 2017, as shown in **Chart 1**. This evolution was possible even thanks to the reduction of the toll/km, decided by ART in 2014.

Chart 1 - Evolution of Italo EBITDA margin (2014-2017)

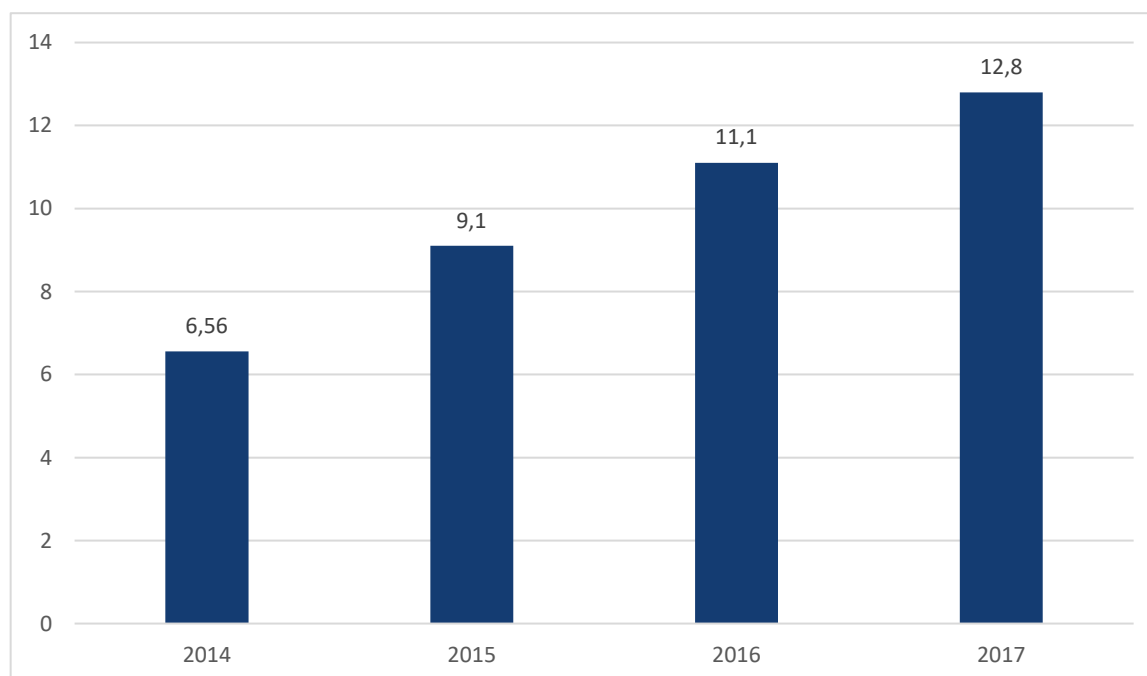


Sources: NTV Financial statement (2014-2017)

The level of yield is very competitive: not so different from the Chinese HSR average yield, 30% lower than AVE (Spanish HSR), less than half of the JR East in Japan and probably 60% lower than Thalys (HSR service between Paris and Bruxelles, operated by 60% SNCF and 40% NMBS/SNCB, the Belgian national railway company). This strategy of pricing was supported by revenue management and seat inventory system that permits to be flexible and quick in defining new offers and prices. At the same time, in 2015, the company decided to make a recapitalization to buy new trainsets to have a higher frequency in order to take more parts of the business market.

NTV has already started to receive the ETR 675 (called "Pendolino") trains from Alstom from last December and at the end of 2019 the fleet will be composed by 42 trains but with an option for 5 new trains. The contract of maintenance with Alstom (a long-term agreement) was reviewed and Italo was able to increase the number of daily connections from 48 to 56 thanks a higher productivity of the fleet between 2014 and 2016. A higher number of connections, together with an aggressive price strategy, permits to Italo to double its customers in just 3 years from 6.56 million in 2014 to 12.8 million in 2017, as shown in *Chart 2*.

Chart 2 - Evolution of Italo passengers (2014-2017) (millions)



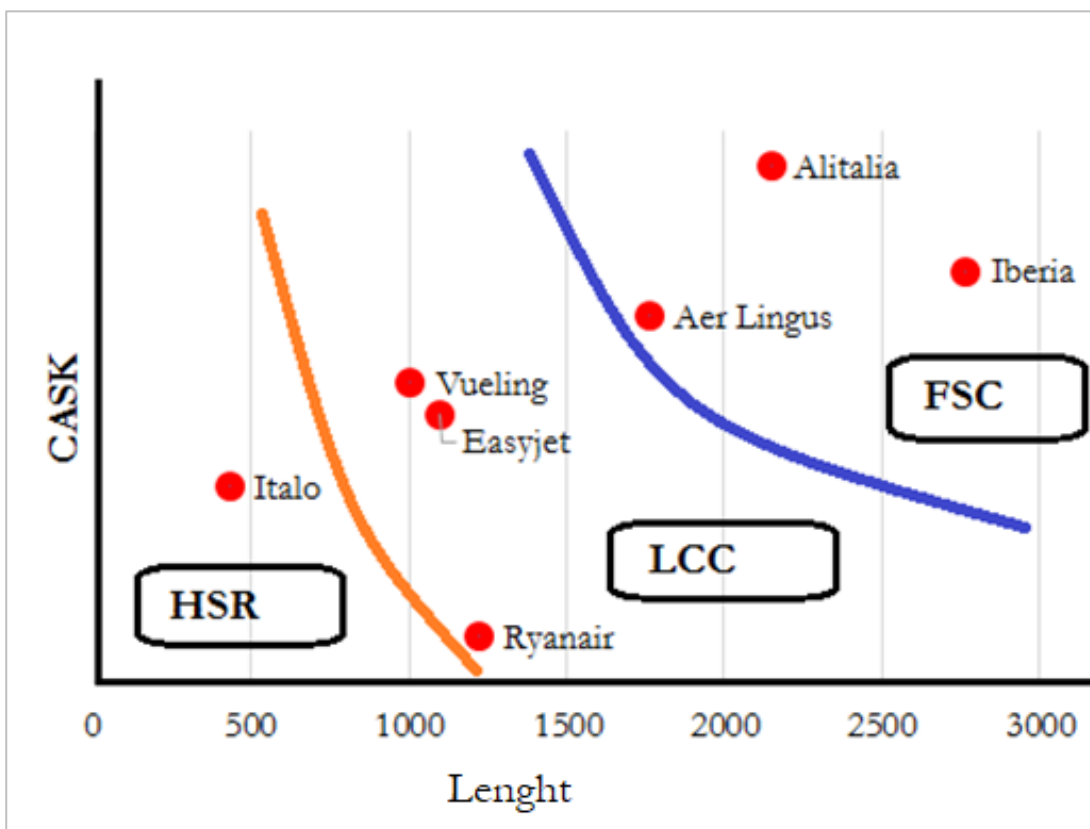
Sources: NTV Financial statement (2014-2017)

The increase of the productivity decreased the cost per available seat-km (CASK) to a lower level than many low-cost operators, even if Italo cannot be considered part of them, thanks to the wide offer of services (Italo Lounge, Club, Wifi, On board portal).

It is possible to compare the HSR with the aviation sector and it is possible to see how Italo is efficient in comparison with the low-cost carriers (LCCs) and full-service carriers (FSCs).

If we take in consideration CASK of Italo is less than half of some of the FSC and this is the reason why the train in Italy had a such important market share in the domestic market, as shown in *Chart 3*.

Chart 3 - Comparison between HSR, LCC and FS operators about Cask/length (km)



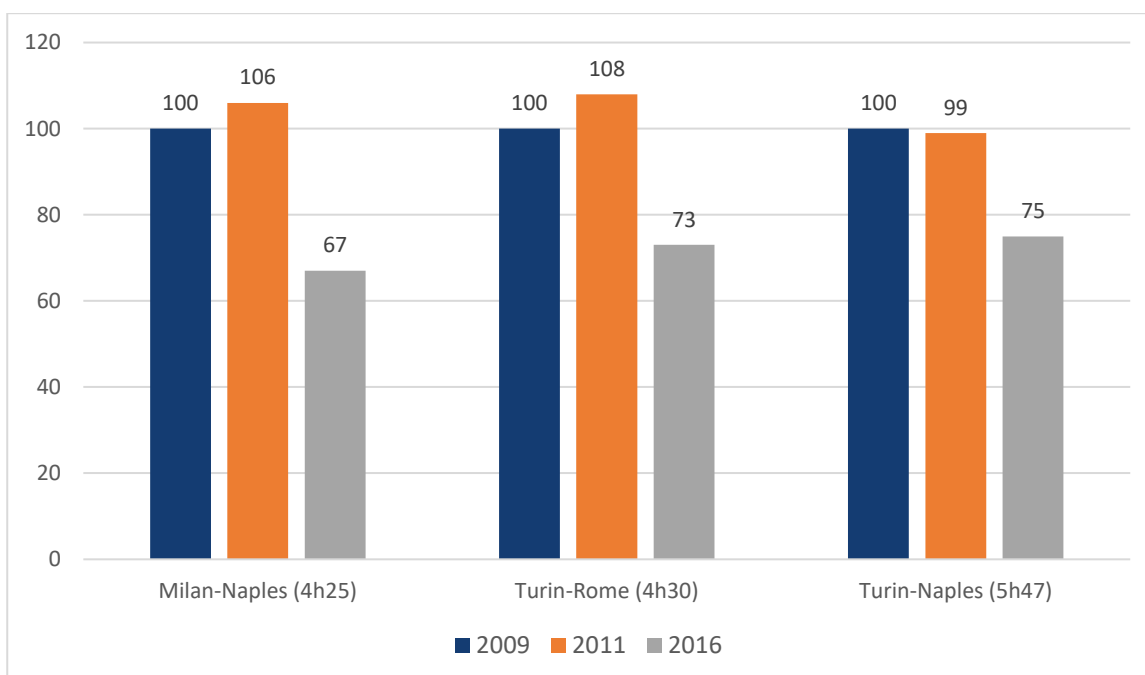
Sources: Giuricin A. (2018), "ownership changes heralds' expansion at Italo-NTV", *Railway Gazette International*

The decrease of the CASK has an important secondary effect: in particular that means the train is now competitive also for longer routes. Historically, in fact, the HSR is able to compete until 3h-3h30m travel with the plane. Due to this low level of CASK, in Italy the HSR industry can get part of aviation market power. Let's make an example.

In Milan-Naples (4h-4h30m), Turin-Rome (4h20) or Turin-Naples (more than 5 hours) routes, aviation had lost part of the market since when there is the competition in the HSR sector. The effect was not clear until 2012, when Italo entered in the market. We can compare, thanks to the *Chart 4*, the evolution of these 3 routes, in these following years:

- 2009, when, according to
- *Tab. 2*, the first routes of HSR infrastructures were just completed, and Frecciarossa service was just created;
- 2011, when almost all the current infrastructure (July 2018) was completed, but there was no competition;
- 2016, when the infrastructure main axis (Turin-Salerno) is completed and there is competition thanks to the Italo market entry.

Chart 4 - Evolution of passengers (2009 = 100) in main aviation routes in Italian market

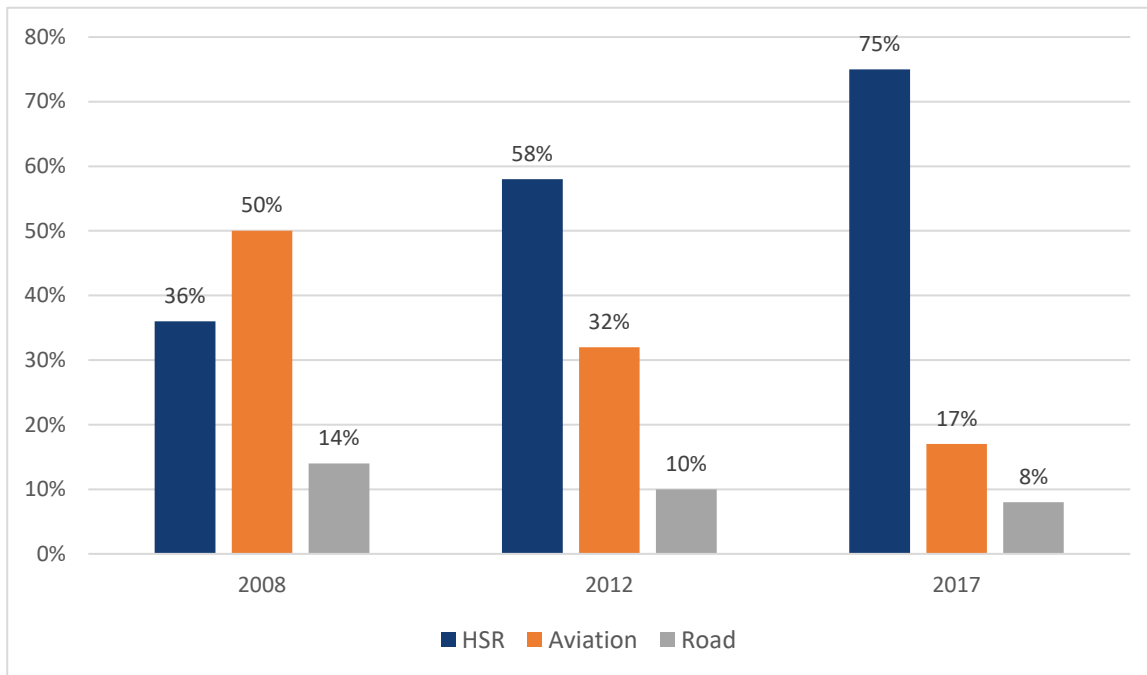


Sources: www.enac.gov.it

As you can see from the chart the HSR competition took a large number of passengers from the air transportation sector in these 3 routes. In particular the average percentage different between 2011 and 2016 is -31%.

Thanks to Italo, the historical incumbent, Trenitalia (with its service Frecciarossa) made important product innovations and the train has now the biggest part of the market share on the most important Italian route: Rome-Milan. Train has now 75% of the market share between the most important cities of Italy and the increase was constant in the last years, as shown in *Chart 5*.

Chart 5 - Modal transportation shares on Milan-Rome route



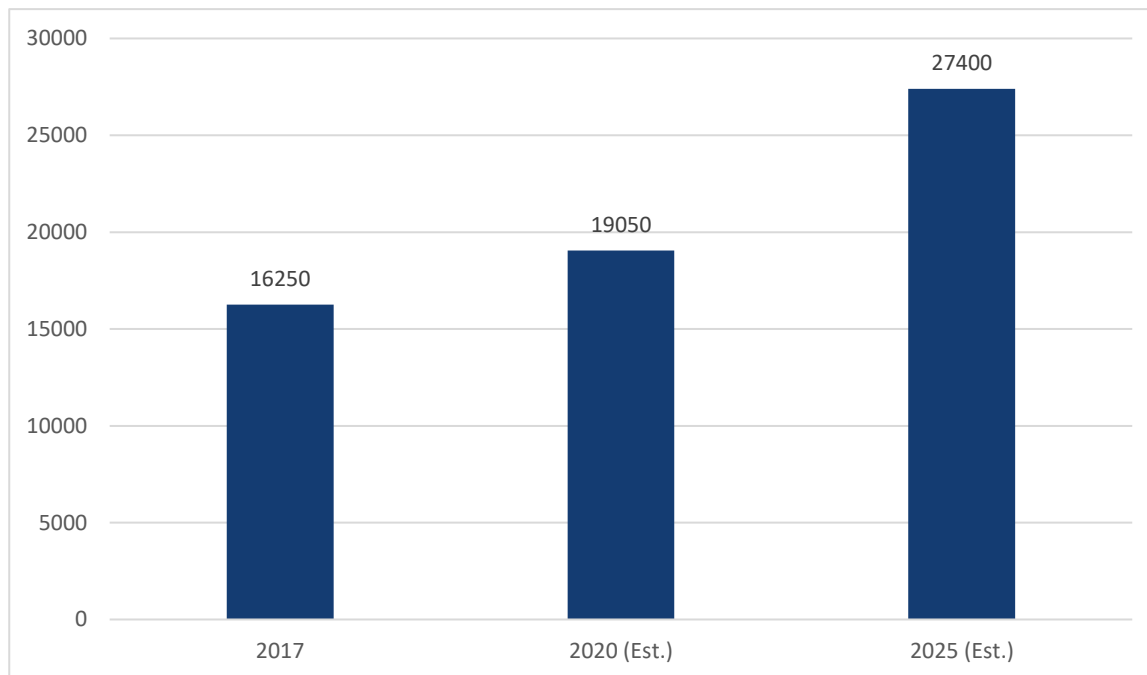
Sources: FS and NTV Financial statement (2008-2017), ENAC, AISCAT, Author personal elaboration

Coming back to Italo business case, and the recent acquisition performed by the American fund, the increase of the productivity (in terms of more trains available for the service) created a higher frequency of the service. This factor is important in HSR business: in fact, the frequency is a key driver of the success to have also a higher yield. So, why GIP bought a railway undertaking that it has not an infrastructure? We can find five different reasons:

1. the EBITDA margin is similar to the Utility sector;
2. the regulation will be stable for the next 4 years (thanks to the access charge);
3. the European market (in terms of other national HSR markets) will open soon;
4. the increased number of trains (from 25 to 42) in the next 20 months will permit to increase frequency and to take new markets, thanks to the opening of new HSR routes;
5. it will be not easy to a third railway operator to enter in the Italian market due to the importance of the frequency of the service of Italo and Frecciarossa.

It is interesting that the Italo business model could be replicate in others European markets, when the fourth railway package will be effective. Target markets are UK, where Italo holds the Rail Franchising PPQ passport, Germany and Spain, but it will be possible to enter in others Countries if the competition will be real. The European HSR market was around 16 Bln Euro in 2017 and it was expected to grow to 27.4 Bln Euro in 2025, as shown in *Chart 6*.

Chart 6 - European HSR market evolution (Mln Euro)



Sources: www.ec.europa.eu/transport

Italo market share in Italian market was 35% and less than 3% at European level: it is possible to think that Italo could double its market share in the next years.

Conclusions

What were the elements of success of Italo? There are several elements to take in consideration in the short history of NTV. First of all the European liberalization activity that create a commercial opportunity in a market, such as the railway one, traditionally managed by the national railway companies. Still about legislative reasons, it has to be pointed out that, even if NTV has had sued different times FS for anti-competition behaviors, the Italian legislator liberalized the HSR market more than other European countries (such as France and Spain). However, NTV made a great action of lobbying, especially at ART, that brought important benefits about making the market really liberalized (for example the reduction of the access charge) a real open market. From a commercial point of view, NTV made important and successful strategies about pricing and service frequency, that increased the EBITDA margin. The results it's even more important if we consider that these decisions were made when the company was quite close to bankruptcy. The last element of success is the high knowledge of the management of the company, that they were able to improve day by day the efficiency of the company. Italo has a great possibility to expand its business in the next years and the new shareholder is strong enough to support to make Italo a success story not only in Italy, but also at European level.

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